

## REMARKS

In the Official Action mailed on **08 December 2008**, the Examiner reviewed claims 1-30. Examiner advised applicant that should claims 12-20 be found allowable, claims 21-30 will be objected to under 37 C.F.R. §1.75 as being a substantial duplicate thereof. Examiner objected to claims 5, 15, 18, 25, and 28 under 37 C.F.R. § 1.75(c), as being of improper dependent form. Examiner rejected claims 1-30 under 35 U.S.C. § 112. Examiner rejected claims 1-5, 7-8, 10-15, 17-18, 20-25, 27-28, and 30 under 35 U.S.C. § 102(a) based on Fuerstenau et al. (“*Int. J. Mass Spectrom.*”, April 2002, hereinafter “Fuerstenau”), as evidenced by Schmitt et al. (“Joint Conference, March 2004”, hereinafter “Schmitt”). Examiner rejected claims 6, 16, and 26 under 35 U.S.C. § 103(a) based on Fuerstenau as evidenced by Schmitt, and Koomen et al. (“*Anal. Bioanal. Chem.*”, June 2002, hereinafter “Koomen”).

### Double Patenting Rejection

Examiner advised applicant that should claims 12-20 be found allowable, claims 21-30 will be objected to under 37 C.F.R. §1.75 as being a substantial duplicate thereof.

Applicant has amended claim 21 to clarify that “the electric field runs **substantially perpendicular** to the direction of the laminar gas flow.” Applicant has amended claim 11 to clarify that “the electric field is **not parallel** to the laminar gas flow.” Applicant respectfully points out that claims 11 and 21, as presently amended, are not substantial duplicates. Applicant has canceled claims 20 and 30.

### **Objections to the Claims**

Examiner objected to claims 5, 15, 18, 25, and 28 under 37 C.F.R. § 1.75(c), as being of improper dependent form.

Applicant has amended claim 18 to clarify that the apparatus includes an **adjusting mechanism**. Applicant has amended claim 28 to clarify that the means includes an **adjusting means**. Applicant has canceled claims 5, 15, and 25 without prejudice. Applicant respectfully submits that amended claims 18 and 28 overcome the Examiner's objections.

### **Rejections under 35 U.S.C. § 112**

Examiner rejected claims 1-30 under 35 U.S.C. § 112. Specifically, Examiner avers that the specification does not disclose how to analyze “the output to determine a chemical composition of the sample.” Applicant disagrees. Applicant respectfully points out that paragraph [0047] in the instant application discloses that “**the analysis can be accomplished by comparing the data with data recorded using known samples.**” Hence, the instant application clearly discloses an approach for “analyzing the output to determine a chemical composition of the sample.”

Examiner avers that the terms “desorbing” and “ablating” are synonyms. Applicant disagrees. Applicant respectfully points out that a desorber is described in paragraph [0052] of the instant application, and an ablator is described in paragraph [0053] of the instant application. A desorber converts **volatile** components of a particle into a gaseous state, whereas an ablator converts **non-volatile** components of a particle into a gaseous state. Further, Applicant points out that the terms “ablating” and “desorbing” have different dictionary meanings (*see e.g.*, <http://www.answers.com>). Hence, the instant application clearly differentiates between desorbing and ablating.

Examiner avers that the terms “a receiving mechanism” and “a receiving means” are not described. Applicant has amended claims 11 and 21 to elide these claim elements.

Examiner avers that claim 7 contradicts claim 1. Applicant disagrees. The electrometer array **can be reset before the analytes reach the electrometer array**. This is consistent with both claim 1 and claim 7. Applicant respectfully points out that the claim element “reading an output of the electrometer array” **does not** preclude performing operations before the analytes reach the electrometer array. Hence, claim 1 and claim 7 are consistent with one another.

Examiner avers that it is not clear from claims 17 and 27 as to whether there should be special electrometer arrays capable of being reset and charged. Applicant disagrees. Applicant respectfully points out that there are at least two approaches for reading the charge. In one approach, the **electrometer is not reset**; instead, the charge is read and the difference from the previous reading is used to determine the charge associated with a particular ionized sample. In the second approach, the **electrometer is reset** and the charge is read. In the second approach, the charge that is read is the value that is associated with the ionized sample. Hence, claims 17 and 27 recite a special case of claims 11 and 21, respectively.

Examiner avers that claims 8, 18, and 28 recite “particle phase” which is not known to the Examiner. Specifically, Examiner avers that there are only three phases of matter: solid, liquid, and gas. Applicant disagrees. Applicant respectfully points out that the term “particle phase” is well known in the art. For example, the term “particle phase” occurs at numerous places in the abstract, specification, and claims sections of issued patent USPN 5,427,899. According to one definition (*see e.g.*, <http://www.answers.com/phase>), a phase is a “chemically and physically uniform quantity of matter that can be separated mechanically from a nonhomogeneous mixture.” Further, a phase “may consist of a single

substance or of a mixture of substances.” It is true that solid, liquid, and gas are three phases, but they are not the only three phases in which matter can exist.

Examiner avers that claims 11 and 21 recite operations, but that it was not apparent to the Examiner as to which structural elements performed the operation. Applicant has amended claim 11 to clarify that the apparatus includes an **electric-field applying mechanism**. Applicant has amended claim 21 to clarify that the means for performing ion mobility spectroscopy includes an **applying means**.

Examiner avers that claims 13 and 14 recite operations, and that it was not clear to the Examiner which structural elements perform the operations. Applicant has amended claims 13 and 14 to clarify that the **receiving mechanism** is configured to desorb or ablate at least one analyte.

Examiner avers that claims 17-20 and 27-30 recite operations, and that it was not clear to the Examiner which structural elements perform the operations. Applicant disagrees. Claim 17 clearly indicates that the **reading mechanism** is configured to reset, accumulate, and read the electrometer array. Applicant has amended claim 18 to clarify that the apparatus includes an **adjusting mechanism**. Applicant has amended claim 19 to clarify that the apparatus includes a **first electrometer array to detect positive ions and a second electrometer array to detect negative ions**. Applicant has amended claim 20 to clarify that the **electric-field applying mechanism** is configured to apply the electric field. Claim 27 clearly indicates that the **reading means** performs the functions. Applicant has amended claim 28 to clarify that the apparatus includes an **adjusting means**. Applicant has amended claim 29 to clarify that the means includes a **first electrometer array to detect positive ions and a second electrometer array to detect negative ions**. Applicant has canceled claim 30.

Examiner avers that claim 21 omits essential element “ionizing means for ionizing the sample.” Applicant has amended claim 21 accordingly.

### **Rejections under 35 U.S.C. § 102**

Examiner rejected claims 1-5, 7-8, 10-15, 17-18, 20-25, 27-28, and 30 under 35 U.S.C. § 102(a) based on Fuerstenau et al. (“*Int. J. Mass Spectrom.*”, April 2002, hereinafter “Fuerstenau”) as evidenced by Schmitt et al. (“Joint Conference, March 2004”, hereinafter “Schmitt”).

Applicant respectfully points out that the **Schmitt reference is after the critical date**. The instant application’s priority date is 22 November 2002. The Schmitt reference is dated March 2004.

During an informal phone conversation with the Examiner, the Examiner clarified that Schmitt is being used under **MPEP 2121.01(III)** to show that a characteristic not disclosed in the reference is **inherent**. Specifically, the Examiner avers that the term “differential ion mobility” inherently requires an electric field to be perpendicular to the laminar flow. Applicant disagrees.

In *In re Rijckaert*, the Federal Circuit held that “[t]he fact that a certain result or characteristic may occur or be present in the prior art is **not sufficient** to establish the inherency of that result or characteristic,” *see* MPEP 2112(IV) (emphasis supplied). In *Continental Can Co. USA v. Monsanto Co.*, the Federal Circuit held that inherency “must make clear that the missing descriptive matter is **necessarily** present in the thing described in the reference,” *see* MPEP 2121.01(III) (emphasis supplied). Similarly, in *Ex parte Levy*, the Federal Circuit held that in “relying upon the theory of inherency, the examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic *necessarily* flows from the teachings of the applied prior art,” *see* MPEP 2112(IV) (emphasis in original).

Applicant respectfully points out that differential ion mobility **does not** require an electric field to be perpendicular to the laminar flow. As shown in FIG. 1 of the instant application, differential ion mobility can be performed by using an electric field that is **parallel** to the laminar flow. Note that, in FIG. 1,

the ions are **spatially separated** because the ions with higher mobility move faster than those with lower mobility. Hence, an electric field that is perpendicular to the laminar flow is **not inherent** to the term “differential ion mobility.”

Applicant has amended claim 1 and 11 to clarify that the laminar gas flow and the electric field are not parallel to each other. Further, Applicant has amended claim 21 to clarify that the electric field runs substantially perpendicular to the direction of the laminar gas flow.

Hence, Applicant respectfully submits that Fuerstenau does not anticipate amended claims 1, 11, and 21 at least for the following reason: the term “differential ion mobility” **does not necessarily** require the electric field and the laminar flow to cross each other, i.e., to not be parallel to each other.

### **Rejections under 35 U.S.C. § 103**

Examiner rejected claims 6, 16, and 26 under 35 U.S.C. § 103(a) based on Fuerstenau as evidenced by Schmitt, and Koomen et al. (“Anal. Bioanal. Chem.”, June 2002, hereinafter “Koomen”). Applicant disagrees.

As explained above, the term “differential ion mobility” does **not** necessarily require the electric field to cross the laminar flow so that they are not parallel to each other. Furthermore, **Schmitt is after the critical date**, and hence, Schmitt **cannot** be combined with other references in a § 103(a) rejection.

Applicant respectfully submits that Fuerstenau as evidenced by Schmitt, and Koomen do not disclose the claimed element “wherein an electric field crosses the laminar gas flow so that **the laminar gas flow and the electric field are not parallel to each other**, and wherein the laminar gas flow and the electric field combine to spatially separate ions of the sample based on ion mobility so that the spatially separated ions contact different elements of an electrometer array” as recited in amended independent claims 1, 11, and 21.

Furthermore, Examiner avers that Koomen discloses using two ion mobility spectrometers as disclosed in claims 6, 16, and 26. Applicant disagrees. Some embodiments of the present invention use **two** ion mobility spectrometers to ensure that both volatile and non-volatile compounds are analyzed (*see e.g.*, claim 6, lines 8-10). Applicant was unable to find anything in Koomen that suggests or motivates using two ion mobility spectrometers. Note that using two ion mobility spectrometers is **costlier** than using a single ion mobility spectrometer. Applicant believes that a single spectrometer would suffice in Koomen's system. Hence, it would **not** be obvious to use two ion mobility spectrometers when one would suffice.

Hence, Applicant submits that claims 6, 16, and 26 are not obvious under § 103(a) in view of Fuerstenau and Koomen.

Hence, Applicant respectfully submits that independent claims 1, 11, and 21 as presently amended are in condition for allowance. Applicant also submits that claims 2-4, 6-10, which depend upon claim 1, claims 12-14, 16-20, which depend upon claim 11, and claims 22-24, 26-29, which depend upon claim 21, are for the same reasons in condition for allowance and for reasons of the unique combinations recited in such claims.

## **CONCLUSION**

It is submitted that the application is presently in form for allowance.  
Such action is respectfully requested.

Respectfully submitted,

By /Shun Yao/  
Shun Yao  
Registration No. 59,242

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Shun Yao  
Park, Vaughan & Fleming LLP  
2820 Fifth Street  
Davis, CA 95618-7759  
Tel: (530) 759-1667  
Fax: (530) 759-1665  
Email: shun@parklegal.com